REMARKS

Applicant thanks the Examiner for the interview held on April 28, 2009. Based on discussions during that interview, the claims have been amended to more clearly define the invention and to distinguish the claimed invention over the cited prior art. The amendments focus on two distinguishing elements of the invention: (1) the type of pain being treated, and (2) the anatomical location of administration of a therapeutic agent. Independent claim 1 is now drawn to alleviation of back pain by administering a glutamate receptor antagonist directly to intervertebral disc tissue to inhibit binding of free glutamate to glutamate receptors located there. Dependent claims recite classes of glutamate receptors and receptor antagonist compounds. The amendment to claim 1 are supported by disclosure at page 2, lines 19-30, and page 7, lines 30-31, of the originally-filed specification. To expedite prosecution, claims 17 and 22, drawn to elbow and knee joints, respectively, have been canceled.

No new matter has been added by this amendment.

Claim Rejections--35 U.S.C.§ 103

Claims 1-7, 12, 13, 15-17, 20, and 21 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Harrington et al., Spine 25(9):929-36 (2000) ("Harrington") in view of Slivka et al (US 2003/0181365; "Slivka") in further view of Lawand, et al., Euro J of Pharmacology 324:169-77 (1997) ("Lawand"). Claims 1, 8, and 11 were rejected for obviousness over the same combination of references in further view of Stanfa et al., Neuroscience 93(4):1391-98 (1999) ("Stanfa"). Claims 1, 9, and 10 were rejected for obviousness over Harrington, Slivka, and Lawand, in further view of Garrett (Biol. Res. for Nursing, Vol. 1 No.4, Apr 2000). The primary reference of each ground of rejection is based on Harrington.

The present invention is based on the premise that glutamate receptors are present on intervertebral disc tissue itself. Independent claim 1 is now drawn to alleviation of back pain by administering a glutamate receptor antagonist directly to intervertebral disc tissue to inhibit binding of free glutamate to glutamate receptors located in the disc. Dependent claims recite the classes of glutamate receptors and specific receptor antagonist compounds that interfere with binding of free glutamate to each of the classes and subclasses of glutamate receptors.

The claims have been amended to distinguish the claimed invention from the disclosure of Harrington. First, the claims have been limited to alleviation of back pain rather than radicular pain as described by Harrington. Second, the claims require administration of a therapeutic agent to disc tissue directly rather than to the epidural space as Harrington reported.

These claims amendments define key elements of the invention that are fundamentally different from and non-obvious over the method described by Harrington. Harrington describes treatment of radicular pain, i.e., shooting or radiating pain that is perceived at a site distant from the site of disease or injury and epidural delivery. Radicular type of pain is exemplified by the pain one feels down the leg termed sciatica or sciatic pain. The mode and site of delivery was predicated on the mechanism of radicular pain. The radicular pain described by Harrington is dependent upon the diffusion of free glutamate across the epidural space to glutamate receptors on the dorsal root ganglion (DRG), located at the dorsal horn of the spinal cord, and therefore described epidural delivery. By contrast, the claims are now limited to treatment of back pain. Back pain is focused and perceived at the site of disease or injury. This type of pain is mediated by engagement of receptors at the site of injury and is not dependent upon diffusion of free glutamate into the epidural space and engagement of receptors on the DRG.

In the present case, the alleviation of back pain is carried out by administration of glutamate receptor antagonists to the disc tissue itself to block bind of free glutamate to the receptors located on the disc itself. Neither Harrington nor any of the other cited references describe or suggest the presence of glutamate receptors on the disc tissue itself. Therefore, it was not obvious to administer antagonists to that specific location.

In the absence of disclosure of the presence of the receptors in disc tissue, one of skill in the art would not choose the specific location and delivery mode (administration directly into intervertebral disc tissue) required by the claims. As was discussed in the interview of April 28, 2009, neither the primary reference, Harrington, nor any of the other secondary references (Slivka, Lawand, Stanfa, or Garrett) provide any description or suggestion of the presence of glutamate receptors on disc tissue. Applicant therefore respectfully requests reconsideration and withdrawal of this rejection.

CONCLUSION

In view of the foregoing amendments and comments, Applicant requests reconsideration and withdrawal of the rejections. Applicants submit that the application is in condition for allowance, and request a Notice for same. Please charge any fees that may be due, or credit any overpayment of same, to Deposit Account 50-0311, Ref. No. 38591-501.

Respectfully submitted,

Ingrid A. Beattie, Reg. No. 42,306
Attorney for Applicant
c/o Mintz Levin
Telephone: (617) 542-6000
Facsimile: (617) 542-2241
Customer Number **30623**.

Dated: May 8, 2009

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